CBSE Test Paper 04

Chapter 05 The Fundamental Unit of Life

1. Which organelle is called the powerhouse of the cell? **(1)**

   a. Golgi apparatus
   b. Ribosomes
   c. Plastids
   d. Mitochondria

2. The cell organelles with digestive enzymes are **(1)**

   a. food vacuoles
   b. Golgi appartus
   c. lysosomes
   d. ribosomes

3. The functional units of Golgi apparatus are **(1)**

   a. cisternae
   b. vacuoles
   c. vesicles
   d. cytoplasm

4. The number of chromosomes present in frog is**: (1)**

   a. 8
   b. 46
   c. 26
   d. 2

5. The membrane surrounding a vacuole in a plant cell is known as**: (1)**

   a. Tonoplast
   b. Nuclear membrane
   c. cell wall

d. Plasma membrane

6. Which organelle is the storage sac of solid and liquid materials? **(1)**

7. Where are proteins synthesised inside the cell? **(1)**

8. What happens to an animal cell when it is placed in a very dilute external medium? Why? **(1)**

9. Is the plant cell wall living or dead? **(1)**

10. What is isotonic solution? **(1)**

11. Why do the animal cells not have cell wall? **(3)**

12. What will happen to a plant cell if it is kept in sugar solution? Explain. **(3)**

13. What would happen to the life of a cell if there was no Golgi apparatus? **(3)**

14. What is plasmolysis? What happens to a plasmolysed cell when it is placed in water? **(3)**

15. Write a note on Golgi apparatus and the functions it performs. **(5)**

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Answers

1. d. Mitochondria

   Explanation: Mitochondria are called the **powerhouses of the cell**. The energy required for various chemical activities is released by mitochondria. They contain enzymes for cellular respiration. During cellular respiration, energy is released in the form of ATP (Adenosine triphosphate). The body uses energy stored in ATP.

2. c. lysosomes

   Explanation: lysosomes are the organelle in the cytoplasm of eukaryotic cells containing hydrolytic enzymes enclosed in a membrane.

3. a. cisternae

   Explanation: Golgi apparatus is membrane-bound organelle of eukaryotic cells (cells with clearly defined nuclei) that is made up of a series of flattened, stacked pouches called **cisternae**. The Golgi apparatus is responsible for transporting, modifying, and packaging proteins and lipids into vesicles for delivery to targeted destinations.

4. c. 26

   Explanation: There are 26 chromosomes (13 pairs) in the cells of a frog. These chromosomes are present inside the nucleus of a cell. Chromosomes contain information for inheritance of features from parents to next generation in the form of DNA (Deoxyribo Nucleic Acid) molecules.

5. a. Tonoplast

   Explanation: Tonoplast is the membrane which bounds the chief vacuole of a plant cell. It is also known as the '**vacuolar membrane**'. It separates the vacuolar contents from the cytoplasm of the cell.

6. Vacuoles

7. Ribosomes are the sites for protein synthesis inside the cell.

8. The animal cell will gain water and would swell up/may burst. Due to osmosis, water moves from the dilute external medium through the semi-permeable cell membrane into the cell with low water concentration.

9. Cell wall is dead but plasma membrane is always living even in plant and animal cell, plasma membrane is made up of lipids and proteins where as cell wall is made up of cellulose.

10. A solution having solute concentration same as that of the cell sap is called isotonic solution.

11. Only animals do not have rigid walls because cell walls are incompatible with the way in which an animal moves and grow. The flaccid cell membrane provides the animal cell freedom of mobility and formation of different tissues which is not present in plants.

12. i. If the sugar solution has higher water potential than the plant cell, water moves into the plant cell, causing the plant cell to be turgid.
    ii. If the sugar solution has lower water potential then the plant cell, water moves out from the plant cell, causing the plant cell to lose water and be plasmolysed.

13. Golgi apparatus plays the important role of packaging various substances for further use or for storage. If there was no Golgi apparatus, various substances would not be in a position to be transformed in proper forms for further use. Certain substances; like protein and lipid are important for the formation of plasma membrane and hence absence of Golgi apparatus will hamper the formation of new cells during cell division.

14. Shrinkage of protoplast from the cell wall in presence of hypertonic solution due to exosmosis is know as plasmolysis. When a plasmolysed cell is placed in water, the concentration of water in the outside medium is more than the concentration in the cell. Hence, water moves inside the cell leading to its swelling.

15. Golgi apparatus or Golgi bodies or Golgi complex is composed of membrane-bound fluid-filled vesicles, vacuoles and cisternae. In animal cells they are larger and only one or two in number, while in plants they are smaller and more in number. Also, in

plant cells, they are distributed throughout the cytoplasm and are called dictyosomes.

Functions:

i. It is involved in the transport and modification of protein, lipids as well as carbohydrates.
ii. It helps in the formation of cell plate during cell division.
iii. It is also involved in the formation of lysosomes and peroxisomes.
iv. The material synthesised near endoplasmic reticulum is packaged and dispatched to various targets and outside the cell through the Golgi apparatus.